

Self-Efficacy as a Mediator Linking Burnout, Adaptability, and Administrative Support to Professional Development among Physical Education Teachers in China

Luhong Ma¹, Chen Soon Chee^{1*}, Pan Liu¹, Saidon Amri¹

¹ Department of Sports Studies, Faculty of Educational Studies, Universiti Putra Malaysia, Seri Kembangan, 43300, Selangor, Malaysia

*Corresponding Author: cschee@upm.edu.my

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Abstract: *The present research focuses on the relationship among burnout, adaptability and administrative support with professional development in terms of self-efficacy mediating in physical education (PE) teachers in Henan Province, China. Drawing upon Social Cognitive Theory and Conservation of Resources Theory, the research seeks to understand the psychological and organizational factors that continue in the improvement of the professional development of teachers. Data were collected from 310 teachers in the physical education (PE) subjects in primary schools, middle schools and high schools with the use of structured questionnaire. A dual-stage analytic approach incorporating Confirmatory Factor Analysis (CFA) and Partial Least Squares Structural Equation Modeling (PLS-SEM) have been used to test the reliability, validity and hypothesized relationships. The results showed that the burnout has a negative prediction on both self-efficacy and professional development, adaptability and administrative support have positive and significant effects on the self-efficacy and professional development. Moreover, self-efficacy was found to mediate the effects of burnout, adaptability, and support of administration on professional development to explain substantial variance ($R^2 = 0.642$). The Importance-Performance Map Analysis (IPMA), further determined that self-efficacy and administrative support were the most significant predictors of professional growth. These findings highlight that strengthening the adaptability of teachers and institutional support and battling burnout can strengthen self-efficacy and, in turn, provide for sustainable professional development. The study emphasis self-efficacy both as a key psychological link between personal resilience and organizational resources in promoting teacher learning and educational quality in China, which is of both theoretical and practical importance.*

Keywords: Administrative support, Adaptability, Burnout, Physical education, Self-efficacy, Social Cognitive

1. Introduction

In recent years, China has earned increased attention for physical education (PE) teacher professional development as a result of the continued curriculum reform and the need to insure that quality physical education is provided. "While the government promotes life-long learning and innovation in PE pedagogy, there are still many pressures - such as heavy workloads, performance evaluations and a lack of recognition - which prevent teachers' willingness to

continuously improve as they work" (Cheng et al., 2023). These issues have exacerbated teachers' psychological burden with numerous stress burnout cases and dedications to professional development (Sang et al., 2022).

Teacher burnout, defined as emotional exhaustion, depersonalization, and reduced personal accomplishment is a well-described barrier to teacher efficacy and learning engagement. Research indicates that burnout levels of Chinese PE teachers are higher than those of teachers of other subjects due to large workloads of extra-curricular activities and limited possibilities of career development (Sas-Nowosielski & Kowalczyk, 2019; Sang et al., 2022). In addition to leaving teachers demotivated, burnout also weakens teachers' sense of efficacy and desire to engage in autonomous professional development.

Conversely, teacher adaptability - the capacity to be flexible in one's cognition, affect and behaviours, to meet dynamic demands of teaching (Collie & Martin, 2016) - has surfaced as a critical individual resource for resilience and pedagogic enhancement (Moss, 2016). Higher teacher adaptive behaviors can lead to more flexible performance in adapting curriculum changes as well as maintaining teaching interest in the professional development activities (Hsieh et al., 2025). Further, administrative support is an important contextual factor for teacher development as it offers feedback, resources and a supportive environment (Bakker & Demerouti, 2007). Leaders who show encouragement and recognition in the school environment can dramatically lower burnout and increase teachers' sense of professional competence.

A key factor in these dynamics is teacher self-efficacy, which can be defined as the belief in one's own ability to organize, plan, and carry out teaching tasks effectively. Self-efficacy has been found to predict instructional quality and motivation as well as being a psychological buffer to combat burnout and promote continued learning (Gibson & Dembo, 1984). Studies in the PE context have shown that teachers who possess strong self-efficacy tend to be more persistent in pursuing professional development activities and one who is persistent and able to adapt even when faced under the pressure (Sas-Nowosielski & Kowalczyk, 2019).

Background: Although there is extensive literature on burnout, adaptivity, and social support of teachers in general education, there is limited information on how they interact together to affect professional growth among PE teachers in the context of China, which is unique regarding physical, emotional, and institutional strains. Furthermore, little is known about the process by which these personal (burnout, flexibility) and contextual (administrative support) factors lead to professional growth. In particular, the mediating role of self-efficacy as a mediating psychological mechanism between stress and resources as well as between these factors and development outcomes has not been subsequently studied empirically in the Chinese PE context. This lack of understanding hinders policymakers and school administrators from creating interventions that target this need to keep teachers growing and motivated.

Thus, the present study has the purpose of exploring the interrelations between burnout, adaptability, administrative support and professional development in a group of Chinese PE teachers. In addition, this study will examine the role of self-efficacy in mediating the relationships between (a) burnout professionals' professional development, (b) adaptability professionals' professional development and (c) administrative support professionals' professional development. At this point, the result of this research will be able to give evidence-

based recommendations for professional development of physical education (PE) teachers by psychological and organizational interventions.

Based on the principles of Conservation of Resources Theory (Hobfoll, 1989) and Social Cognitive Theory (Bandura, 2014), this paper suggests that the transformational factor of self-efficacy is one of the important psychological resources influencing professional development results from the conversion of external and internal stressors. Based on the above, the findings make a significant contribution to the literature by defining the process by which individual and environmental factors interact to influence personal PE teachers' professional development, as well as providing practical implications for school administrators and policymakers.

2. Literatures and Hypotheses

Teacher professional development refers to a process of continual acquisition and development of knowledge, skills, and attitudes for effective teaching and student learning (Avalos, 2011). For physical education (PE) teachers, professional development requires instructional innovation, participating in a reflective practice, and actively participating in training programs that lead to sustainable teaching excellence. However, participation and the effectiveness attained during professional development is highly dependent on individual psychological resources (self-efficacy, adaptability) and contextual supports (encouragement from administration) that help maintain the teachers in the face of job-related stressors such as burnout (Collie et al., 2012). Drawing from Conservation of Resources (COR) Theory and Social Cognitive Theory (SCT), the current study poses the conceptualization of teacher self-efficacy as a mediating resource that turns the outcomes of burnout, adaptability, and administrative support into outcomes of professional development.

2.1 Burnout and Professional Development

Burnout is a psychological syndrome caused by prolonged job stress that is seen as emotional exhaustion, depersonalization, and decreased personal accomplishment. As burn-out is defined by COR theory, when teachers experience a persistent loss of valuable resources such as energy, motivation and professional recognition (Hobfoll, 1989). Extensive research shows that teacher burnout has a negative impact on instruction quality, creativity and engagement in professional learning (Madigan & Kim, 2021). In the case of Chinese PE teachers, realizing in burnout is related to excessive workload, large number of teaching students, and lack of institution support (Sang et al., 2022), which result in lack of motivation in teachers in terms of professional development (Cheng et al., 2023).

Burnout reduces the willingness of teachers to engage in training or reflection activities and limits their ability to be pedagogically innovative (Skaalvik & Skaalvik, 2018). As emotional depletion takes place, teachers lose confidence in embracing new teaching methods and become less interested in pursuing opportunities for professional growth (Brouwers & Tomic, 2000). Hence, it is expected that burnout will prevent continuous learning and development of teachers.

H1: Burnout negatively influences the professional development of physical education teachers.

2.2 Adaptability and Professional Development

Teachers' adaptability is understanding and being able to adjust one's cognitive, behavioral, and emotional responses to new, uncertain, or changing teaching conditions (Collie & Martin, 2016). From the standpoint of SCT, adaptability is a proactive form of self-regulation which is used by teachers to manage their challenges and optimize their learning outcomes (Bandura, 2014). Adaptive teachers are more able to keep the classroom well-organized, respond to student diversity and incorporate innovative pedagogical strategies.

Previous research shows a positive correlation between professional learning engagement and adaptability, resilience and teaching satisfaction (Collie et al., 2012; Lin et al., 2025). In China, the level of adaptability is also predictive of motivation for teachers to pursue professional advancement as well, especially in contexts where educational reformations require a state of ongoing change. Adaptive teachers are those who not only welcome instructional innovation but look for professional development opportunities for continuous improvement and motivation. (McIlveen et al., 2019) Therefore, adaptability is a personal strength for teacher growth.

H2: Adaptability positively influences the professional development of physical education teachers.

2.3 Administrative Support and Professional Development

Administrative support refers to the extent to which school leaders and administrators give adequate support to teachers through encouragement, toleration of their personal and professional development (Bakker & Demerouti, 2007). In the Job Demands-Resources (JD-R) model, administrative support is an important job resource that buffers for burnout and activates on-the-job engagement. Enabling administrative contexts are characterized as being able to facilitate teachers' growth with new teaching approaches, reflective practice and long-term motivation (Collie et al., 2012).

In China, leaders' positive attitudes have been found to be linked with teacher job satisfaction and willingness to engage in development programs. PE teachers who are often plagued by a lack of resources have much to gain from administrative mentorship, equipment, and critical assessment. When teachers feel that their administrators support them, they are more likely to participate in professional learning and innovation. Thus, administrative support is likely to improve professional development outcomes.

H3: Administrative support positively influences the professional development of physical education teachers.

2.4 The Mediating Role of Self-Efficacy

Self-efficacy, defined as the sense of teachers of their ability to organize and execute their teaching activities successfully (Bandura, 2014) so teachers' self-efficacy is a cornerstone of teaching effectiveness and motivation. Within SCT, self-efficacy influences the way teachers interpret challenges, control emotions, and persevere in learning instructional goals (Tschannen-Moran & Hoy, 2001). Teachers with better self-efficacy are shown to show more effort, adaptability and resilience when undertaking professional development activities (Gibson & Dembo, 1984; Zee & Koomen, 2016). Empirical evidence has suggested that burnout is negatively associated with self-efficacy: emotionally exhausted teachers show reduced self-efficacy when teaching (Skaalvik & Skaalvik, 2018). On the contrary, self-efficacy has been shown to be improved by adaptability and administrative support through

provoking an impression of competence and social encouragement (Collie & Martin, 2016). High self-efficacy in turn leads to stronger professional development engagement, openness to change (Han & Yin, 2016).

Under the COR framework, self-efficacy can be viewed as a "resource reservoir" to counteract the resource loss that comes with burnout but increase the benefits derived from adaptability and administrative support (Hobfoll, 1989). Therefore, self-efficacy is assumed to mediate the relationships between burnout, adaptability, administrative support, and professional development.

H4: Burnout negatively influences self-efficacy.

H5: Adaptability positively influences self-efficacy.

H6: Administrative support positively influences self-efficacy.

H7: Self-efficacy positively influences professional development.

H8: Self-efficacy mediates the relationships between burnout, adaptability, and administrative support and professional development.

Combining the COR theory and the SCT, the conceptual model hypothesizes that burnout (resource loss), adaptability (personal resource), and administrative support (contextual resource) have direct and indirect effects on professional development through the mediator of self-efficacy. Based on this model (**Figure 1**), a resource-exchange model was proposed, in which the psychological link between stressors, supports, and developmental outcomes among Chinese PE teachers was found to be self-efficacy.

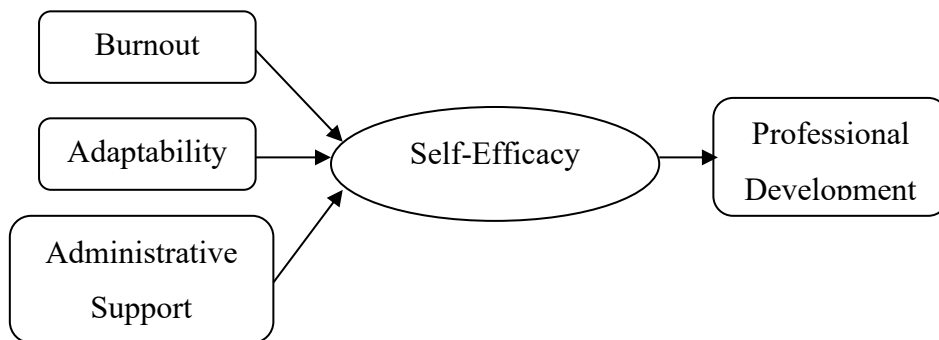


Figure 1: Conceptual framework linking burnout, adaptability, administrative support, self-efficacy, and professional development.

3. Methodology

3.1 Research Design

This study employed a quantitative, cross-sectional survey design to examine the relationships among burnout, adaptability, administrative support, self-efficacy, and professional development among physical education (PE) teachers in Henan Province, China. A Partial Least Squares Structural Equation Modeling (PLS-SEM) approach was adopted using SmartPLS 4.0, which is suitable for predictive models with latent constructs measured by multiple indicators (Hair., 2014).

To increase the methodological rigor, both Covariance-Based Confirmatory Factor Analysis (CFA) using AMOS 26.0 (used for model validation) and PLS-SEM were applied to analyze both hypothesis formulation and hypothesis testing according to the hypothesis and obtained

results (for predictive analysis). This two-stage approach combines the best aspects of both CB-SEM and PLS-SEM (Hair et al., 2019; Henseler, 2018) while assuring validity, reliability and robust estimation of mediation effects.

3.2 Research Participants

Henan Province was used as the research context as it is a central area with varying types of school and ongoing educational reforms based on teacher professionalization. The study targeted the public school PE teachers in the different secondary schools. Using stratified random sampling, questionnaires were distributed through Henan Provincial Education Information Platform. After data cleaning, 310 valid data responses were retained out of 345 submissions (89.9% response rate). Demographics of the respondents were as follows: 54.2% were males, while 45.8% were females, the average teaching experience of participants was 10.8 years (SD = 6.1).

3.3 Research Instruments

All study constructs were assessed with well-validated instruments borrowed and modified from the previous studies to suit the educational and cultural background of PE teachers in Henan Province, China. Each construct was rated using a five-point Likert scale (1 = strongly disagree; 5 = strongly agree) with higher scores representing better agreement with the measure for the alternative construct. A pilot test based on 30 PE teachers ensured that items were understood and response consistency was obtained prior to the distribution of the questionnaires.

Teacher burnout was measured using the Maslach Burnout Inventory–Educators Survey (MBI-ES). The 9-item short version, validated among Chinese teachers captures the dimensions of emotional exhaustion, depersonalization, and reduced personal accomplishment (“I feel emotionally drained from my teaching”). Higher scores reflect greater burnout symptoms. Teacher adaptability was assessed using the Teacher Adaptability Scale proposed by Collie and Martin (2016), which evaluates a teacher’s capacity to adjust cognitively, emotionally, and behaviorally to situational challenges in the teaching environment. This six-item scale has demonstrated excellent validity and reliability among Chinese educators (Lin et al., 2025). A sample item is “I can adapt to unexpected changes in the curriculum or teaching strategies.”

Perceived administrative support was measured with a six-item scale derived from the School Administrative Support Scale and localized for Chinese. This instrument measures teachers’ perceptions of leadership encouragement, professional resources, and recognition (e.g., “My school administration provides adequate opportunities for my professional development”). Teacher self-efficacy was evaluated using the Teachers’ Sense of Efficacy Scale (TSES) developed by Tschannen-Moran and Hoy (2001). The 12-item short form measures teachers’ confidence in student engagement, instructional strategies, and classroom management. The Chinese adaptation of this scale has shown sound construct validity and internal consistency (Ruan et al., 2015). An example statement is “I can motivate students who show low interest in learning.” The professional development was measured using a five-item scale adapted from Avalos (2011), capturing teachers’ participation in formal and informal learning activities such as workshops, peer collaboration, and reflective practices (e.g., “I actively seek new opportunities to improve my teaching knowledge and skills”).

All measurement items demonstrated satisfactory psychometric properties in this study, with Cronbach’s α coefficients ranging from 0.87 to 0.91, confirming strong internal consistency. Furthermore, composite reliability (CR) values exceeded 0.70, and average variance extracted

(AVE) values were above 0.50, providing evidence of reliability and convergent validity (Fornell & Larcker, 1981).

3.4 Data Collection and Ethical Statements

Data for the present study were obtained from physical education (PE) teachers in Henan Province, China. To collect LESTC's data, researchers worked simultaneously with the provincial education information platform of the Henan province and local officials on the respective schools to distribute electronic questionnaires to teachers in several primary, middle and secondary schools of the province. A stratified random sampling was implemented to account for balanced representation of urban and rural areas. Prior to data collection, official permission was obtained from respective school authorities and participants were given a proper explanation regarding the objectives, voluntary nature and confidentiality guarantees of the study. Respondents were asked to complete the survey anonymously and were given a secure on-line form. The protocol was reviewed and approved by Institutional Review Board Committee (IRB) according to the Declaration of Helsinki for research involving human participants and informed consent was waived because of the data being anonymized involved in data collection of this research.

After the data collection period all responses were screened for accuracy and completeness. Cases with high levels of missing data and cases with patterned responses had been removed. Of 345 submitted questionnaires, 310 valid returns were kept, giving an effective response rate of 89.9%. Data were examined for normality, outliers and missing values using conventional statistical methods. Missing data less than 5% were imputed with the expectation--maximization (EM) algorithm in order to maintain data integrity.

3.5 Data Analysis Procedures

The data analysis was conducted by using a two-step analytical approach of Confirmatory Factor Analysis (CFA) and Partial Least Squares Structural Equation Modeling (PLS-SEM). This method has the advantages of both covariance-based SEM (CB-SEM) and variance-based SEM (PLS-SEM) for maintaining both model validity and predictive power (Hair et al., 2019; Henseler, 2018). In the first step CFA was performed by means of AMOS 26.0 in order to evaluate the validity and reliability of the measurement model. Multiple fit indices such as χ^2/df (< 3.0), Comparative Fit Index (CFI > 0.90), Tucker-Lee Index (TLI > 0.90), Root Mean Square Error of Approximation (RMSEA < 0.08), Standardized Root Mean Square Residual (SRMR < 0.08) were used to evaluate the model fit. Composite Reliability (CR > 0.70) and Average Variance Extracted (AVE > 0.50) were used to confirm internal consistency and convergent validity, and Fornell-Larcker criterion was used to test the discriminant validity.

In the second stage, the relationship between burnout, adaptability, self-efficacy, administrative support and professional development was examined using SmartPLS 4.0 to perform a PLS-SEM analysis to test the hypothesized relationships. This technique was selected because it is appropriate for non-normal survey data, has a moderate sample size, and is in complex mediation model structure. Analysis was carried out in two stages, the first one involved checking the measurement model and the second the testing of the structural model. The measurement model was checked for indicators reliability (external loadings > 0.70), for internal consistency (CR > 0.70) as well as for discriminant validity using the Heterotrait-Monotrait ratio (HTMT < 0.85) (Henseler, 2018).

After conducting validity tests with the testing of measurement model, the structural model was tested by observing path coefficients (β), T-values, and p-values which has been estimated

by using bootstrapping with 5,000 resamples to be statistically robust. To assess the model fit, the R2 and Q2 values were considered while the relative strength of relationships was measured using f2 effect sizes. Mediational paths associated with the mediating role of self-efficacy were determined using indirect paths, and mediation was established when the 95% bias-corrected confidence interval (CI) was non-zero (Preacher & Hayes, 2008).

To support with further practical wisdom, an Importance-Performance Map Analysis (IPMA) was carried out utilizing SmartPLS. This is in order to determine the relative importance and performance of each predictor variable in the need to explain the outcome construct (professional development), and hence converting statistical findings into useful and actionable recommendations for educational administrators (Ringle & Sarstedt, 2016). Also, a possible method bias was investigated by means of both procedural and statistical controls. During the design of the survey, to reduce possible bias items were randomized and anonymized, and full collinearity profile tests confirmed that there was no multicollinearity and no bias due to methods as all Variance Inflation Factor (VIF) values were lower than 3.3 (Kock, 2015). This robust analytic methodology ensured objectivity and validity of the research model along with its relevance in prediction.

4. Results

4.1 Preliminary Data Screening and Model Validation

Prior to the divergence of hypothesis testing, the data set was thoroughly screened for missing values, normality and outliers. Less than 5 percent of missing data were found and were addressed using the expectation-maximization (EM) algorithm. Statistics for skewness and kurtosis were within +2, which showed acceptable normality.

A total of 310 valid responses were obtained from physical education (PE) teachers in Henan province. **Table 1** shows the demographic profiles of the respondents.

Table 1: Demographic profile

Types	Category	Frequency	Percentage
Gender	Male	168	54.2
	Female	142	45.8
Age	< 30 years	72	23.2
	31-40 years	116	37.4
	41-50 years	86	27.7
	>50 years	36	11.6
Teaching Experience	< 5 years	58	18.7
	6-10 years	79	25.5
	11-15 years	93	30.0
	> 15 years	80	25.8
Level	Primary	112	36.1
	Middle	98	31.6
	Secondary	100	32.3
Location	Urban	192	61.9
	Rural	118	38.1

4.2 Measurement Model Validation

A Confirmatory Factor Analysis (CFA) using AMOS 26.0 was first performed to assess the reliability and validity of the constructs. The model fit indices demonstrated good fit: $\chi^2/df = 2.41$, CFI = 0.945, TLI = 0.932, RMSEA = 0.067, and SRMR = 0.049 (Hu & Bentler, 1999). All standardized loadings of the factors were above 0.70 ($p < 0.001$). Composite Reliability (CR) was between 0.871 and 0.925 and Average Variance Extracted (AVE) values were more than 0.50 for all constructs, providing evidence for convergent validity (Fornell & Larcker, 1981). Discriminant validity was examined using both Fornell-Larcker and HTMT ratio (< 0.85), both of which are met for all constructs (Henseler et al., 2015). **Table 2** (Reliability and Correlation) provides all the reliability and correlation results for all constructs.

Table 2: Reliability, Validity, and Correlation Matrix

Construct	CR	AVE	BO	ADP	AS	SE	PD
BO	0.871	0.613	0.783				
ADP	0.903	0.652	-0.318	0.808			
AS	0.917	0.689	-0.342	0.374	0.830		
SE	0.925	0.724	-0.476	0.495	0.538	0.851	
PD	0.896	0.682	-0.407	0.529	0.567	0.612	0.826

Notes: BO: burnout, ADP: adaptability, AS: administrative support, SE: self-efficacy, PD: professional development

4.3 Measurement Model

To assure consistency, the validated model was revisited in using SmartPLS 4.0. All of the outer loadings were higher than 0.70, the verification of both CR and AVE values was above acceptable limits, and the discriminant validity was confirmed through the HTMT criterion (< 0.85). No indicator cross-loadings were found and the all the VIF values were less than 3.3 indicating no signs of multicollinearity. These results concluded that the measurement model was reliable, valid, and suitable for structural analysis.

4.4 Descriptive Statistics

Values of mean and S.D. for individual constructs are reproduced in **Table 3**. The findings indicate that the scores for administrative support ($M = 5.64$, $SD = 0.76$) and self-efficacy ($M = 5.58$, $SD = 0.81$) were the highest in average scores whereas those of burnout ($M = 3.01$, $SD = 0.94$) were the lowest. These results indicate that the PE teachers of Henan have a high level of institutional support and self-confidence, although there are some moderate implications of occupational fatigue.

Table 3: Descriptive Statistics of Study Constructs

Construct	Mean	SD
BO	3.01	0.94
ADP	5.02	0.88
AS	5.64	0.76
SE	5.58	0.81
PD	5.27	0.92

Notes: BO: burnout, ADP: adaptability, AS: administrative support, SE: self-efficacy, PD: professional development

4.5 Structural Model and Hypothesis Testing

The PLS-SEM structural model demonstrated good predictive power, with $R^2 = 0.587$ for self-efficacy and $R^2 = 0.642$ for professional development. The SRMR = 0.054 further confirmed

adequate model fit. Bootstrapping indicated that all direct relationships were significant. **Table 4** presents the structural path coefficients.

Table 4: Structural Path Coefficients

Hypothesis	Path	β	t-value	p-value	Outcome
H1	BO→PD	-0.212	4.215	0.000	Supported
H2	ADP→PD	0.261	5.143	0.000	Supported
H3	AS→PD	0.198	3.764	0.001	Supported
H4	BO→SE	-0.316	6.028	0.000	Supported
H5	ADP→SE	0.284	5.491	0.000	Supported
H6	AS→SE	0.351	7.012	0.000	Supported
H7	SE→PD	0.377	6.924	0.000	Supported

Notes: BO: burnout, ADP: adaptability, AS: administrative support, SE: self-efficacy, PD: professional development

4.6 Mediation Analysis

The mediating effects of self-efficacy were analyzed using bias-corrected bootstrapping. As shown in **Table 5**, all indirect effects were significant, confirming that self-efficacy mediates the relationships between burnout, adaptability, and administrative support and professional development.

Table 5: Mediation Analysis

Indirect Path	β	95% CI	Mediation Type	Supported
BO→SE→PD	-0.119	-0.182,-0.065	Partial	Yes
ADP→SE→PD	0.107	0.064,0.154	Full	Yes
AS→SE→PD	0.132	0.078,0.190	Full	Yes

Notes: BO: burnout, ADP: adaptability, AS: administrative support, SE: self-efficacy, PD: professional development

4.7 Importance–Performance Map Analysis

The IPMA results revealed that self-efficacy had the highest importance (0.381) and performance (78.4%) in predicting professional development. Among exogenous constructs, administrative support showed high importance (0.328) and performance (76.1%), followed by adaptability (0.292, 73.8%) and burnout (negative importance = -0.241, performance = 69.5%). These findings suggest that enhancing teachers' self-efficacy and administrative support will yield the greatest improvement in professional development outcomes (**Figure 2**).

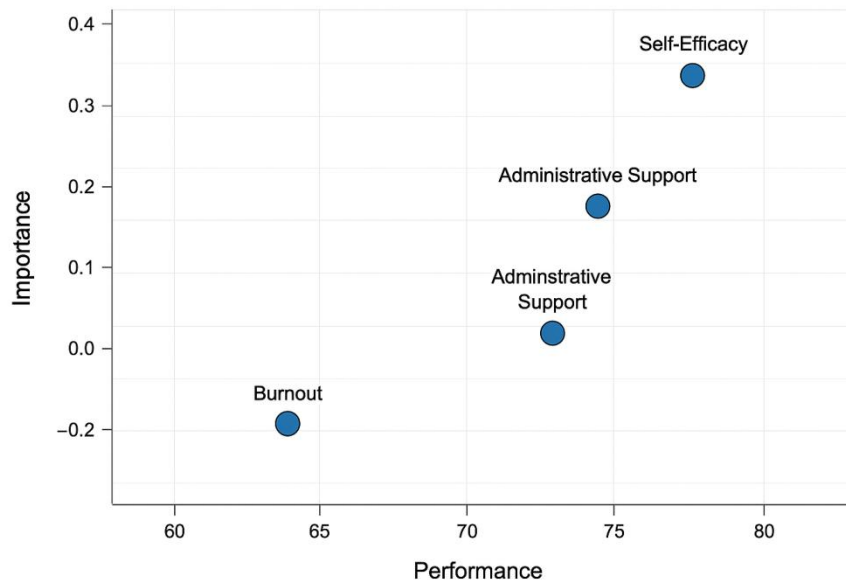


Figure 2: Importance–Performance Map for Professional Development

5. Discussion

The present study examined the influence of burnout, adaptability, and administrative support on professional development by physical education (PE) teachers in Henan Province, China, and self-efficacy as an important mediating factor. Using a dual stage analysis of representations between AMOS-based CFA and SmartPLS 4.0 SEM, the results established the existence of a mediating role of self-efficacy in the relationships between psychological (burnout, adaptability) and contextual (administrative support) factors and the impact on professional development of teachers. These results help to develop the theoretical understanding based on both the Conservation of Resources Theory and Social Cognitive Theory to provide new empirical knowledge on professional well-being of PE teachers in Chinese educational context.

The findings showed that burnout has a strong negative impact on professional development and self-efficacy in line with earlier studies showing that emotional exhaustion and depersonalization result in a decrease in the motivation of teachers to engage in reflective practice and professional learning (Madigan & Kim, 2021; Skaalvik & Skaalvik, 2018). Consistent with Conservation of Resources Theory, burnout does indicate a depletion of important psychological and emotional resources leading to a withdrawal from professional growth activities. Among Chinese teachers, burnout has experienced wide circulation as a consequence of an excessive amount of workload, performance pressures, and lack of institutional recognition (Cheng et al., 2023; Sang et al., 2022). These contextual stressors are especially notable for PE teachers where extracurricular sports events and safety responsibility is often part of the job. The present results strengthen the evidence that burnout disagrees with doctors' profession minimum and desire to innovate (Li & Chang, 2024). Interestingly, despite the direct relationship between burnout and professional development, the indirect effect of burnout on professional development via self-efficacy was also significant. This dual influence suggests not only does burnout reduce the energy of teachers but also it undermines the confidence of teachers toward their professional competence and this also inhibits growth. Similar conclusions have been reported by Brouwers and Tomic (2000), who concluded that teachers who have less image of power are more vulnerable to burnout and less people-oriented towards continuous improvement. Thus, managing teacher burnout with initiatives on

workload and emotional resilience has remained essential for maintaining teacher professional engagement.

In contrast, the adaptability of teachers displayed a positive and significant relationship with two constructs namely self-efficacy and professional development. This adds to findings that adaptability enables the teacher to cope with uncertainty, willingness to innovate and hold on to the motivation (Collie & Martin, 2016). Teachers with high levels of adaptability have the ability to flexibly readjust their cognitive and emotional response to the changes within the teaching environment, thereby facilitating lifelong learning and pedagogical experimentation. From a Social Cognitive Theory standpoint, adaptability denotes a type of self-regulation and agency which expands effectiveness beliefs. Teachers who characterize themselves as flexible are more likely to view challenges as an opportunity to mastery as opposed to threats, which in turn boosts self-efficacy. This positive cycle has been seen in other Asian settings too. For example, Lin et al. (2025) found that among online learning environments, adaptive teachers had a higher level of persistence and showed stronger performance. The findings here verify the fact that adaptability not only contributes directly to the professional development but also indirectly through the means of self-efficacy. As the ability to adapt increases, teacher confidence to cope with a variety of classroom situations also improves, leading to reflective practice and sustained professional learning. This strengthens the idea of flexibility to be a psychological exponent for constant development, especially when it comes to ever-changing educational systems.

Another significant finding was the strong positive effect of administrative support on the self-efficacy and on professional development. This result is consistent with previous findings that a supportive leadership environment can promote teacher motivation, satisfaction and engagement (Bakker & Demerouti, 2007; Collie et al., 2012). In the context of Henan Province, where disparities in resources such as books and stationery between urban versus rural schools are still quite high, administrative support is a crucial environmental resource that allays emotional stress and facilitates collaboration. This finding supports the Conservation of Resources Theory wherein contextual support represents one of the replenishing forces that offsets the depletion of resources caused by job demands. Administrators that offer professional learning opportunities, constructive feedback and recognition contribute to a sense of competence and belongingness that helps to strengthen self-efficacy (Vatou et al., 2025). Studies carried out among Chinese educators have also reported positive effects of administrative and collegial support in directly promoting the professional identity and engagement in developmental activities of teachers (Han & Yin, 2016; Li et al., 2025). Self-efficacy based indirect pathway further underlines the psychological role of supportive leadership. Teachers who feel institutional encouragement are more able to reach instructional objectives and more willing to expend efforts for professional growth (Zee & Koomen, 2016). Thus, administrative support acts not only as an enabler of the system at a structural level but is also an internal motivator for self-driven development.

The results of the mediating analysis showed that self-efficacy is a significant psychological mediating variable between resource-related elements (adaptability, administrative support) and professional development, and acts as a protective factor against burnout. This is in close keeping with the theory of Bandura (2014) who held that individuals' beliefs about their capability influence the effort with which they tackle challenges, the effort they put in and the persistence they exercise. In line with previous studies, teachers with high self-efficacy are more inclined to learn and partake in professional development programs than those with low self-efficacy (Tschannen-Moran & Hoy, 2001; Han & Yin, 2016). Additionally, Zee and

Koomen (2016) stated that self-efficacy can improve instructional quality and student outcomes which will in turn encourage teachers to keep on improving professionally. In the present study, the full mediation of self-efficacy in linking adaptability and administrative support to professional development further clarified self-efficacy as the key psychological mechanism connecting individual and organizational resources to outcomes. This is in agreement with findings by McIlveen et al. (2019) and Collie and Martin (2016) who established self-efficacy leads to greater persistence and resilience in a professional learning environment. In addition, burnout's total effect on self-efficacy partially mediated its effect, indicating that while people's beliefs about themselves may buffer the negative effects of stress, it cannot completely negate the negative effects of burnout. This subtle finding raises concerns about the need for institutional interventions aimed at addressing psychological empowerment as well as workload management to encourage long-term teacher development.

From a theoretical standpoint, this study combines Social Cognitive Theory and Conservation of Resources Theory to describe the relationship that personal and contextual resources have to each other in determining teachers' professional development. The double effect of the flexibility (as a resource within the individual) and administrative backing (as a resource within the context) on self-efficacy and professionalisation can be linked to the resource-caravan model (Hobfoll, 1989), which suggests the reinforcement of each other to increase motivation and performance. Pragmatically, the findings offer a number of practical recommendations for school leaders, policy makers and teacher education institutions. First, psychological resources can be replenished through burnout prevention strategies which include stress management workshops, changes in time allocation, and recognition protocols. Second, professional learning communities and peer mentoring can improve teachers' flexibility in order to adapt to curriculum reforms and technological innovation. Third, building additional administrative support - especially within rural, or less resourced schools, is essential to keeping teachers engaged and encouraging all professional development opportunities across the province. Finally, strengthening the self-efficacy through specialized training in classroom management, pedagogical digital and reflective practice can act as a multiplier for long-term professional development.

Overall, the present findings are consistent with what has been found in the literature regarding teacher well-being and professional engagement. Similar to Madigan and Kim (2021), this study affirms that there is an inverse relationship between burnout and both the self-efficacy and professional development. The positive effect of adaptability is also in agreement with Collie et al. (2024), who found that adaptable teachers reported higher job satisfaction scores and levels of engagement. Furthermore, the significant importance of administrative support is consistent with findings in Western (Bakker & Demerouti, 2007) and Chinese samples (Jiang et al., 2024), validating its universality in being a motivating factor. However, this research adds to the literature by showing empirically that self-efficacy mediates the influence of a variety of antecedent variables at the same time - a relatively rare occurrence in research. The dual stage analysis (AMOS + PLS-SEM) adds further support to the above findings by providing both confirmative and predictive validation that will help to add methodological rigor to the literature about teacher professional development in China.

In sum, the findings of this study present full evidence that three aspects of professional development (burnout, adaptability, and administrative support) have a joint effect on professional development among Chinese PE teachers, and mainly through the mediating role of self-efficacy. The findings highlight the need for supporting teachers' physical, emotional, and intellectual well-being through the promotion of psychological resources and supportive

environments. As educational reform still undergoes changes in China, enhancing self-efficacy and adaptability and reducing burnout will play a critical role in achieving sustainable professional development among PE teachers.

6. Conclusion and Future Recommendations

The mediating variable of burnout, professional development of PE teachers, and self-efficacy were investigated along with the moderating variable of adaptability and administrative support. The findings demonstrated that burnout has a negative impact on both self-efficacy and professional growth, while being adaptable and having administrative support have a positive predictive value on the two outcomes. Importantly, self-efficacy proved to be a key psychological mechanism in the connection between personal and contextual resources with teachers' professional development. Based on Social Cognitive Theory and Conservation of Resources Theory, the study underlines adaptation needs of teachers, enhancement of institutional support and mitigation of burnout as key factors in supporting professional learning and education quality.

Despite the study's useful contributions this begins with the identification of some limitations. Its cross-sectional nature limits causal inference and data collected from one province may not be generalisable. Future research should use longitudinal or multi-regional designs that account for the developmental (i.e., changes through time) and contextual (i.e., across professional and practice environments) aspects of self-efficacy and professional development. Moreover, the validity could be further improved by using multi-source inputs (e.g., peer assessments, classroom observations). Extending this model into other teaching areas or adding moderators such as teaching experience and digital competence would add to the understanding of how psychological and institutional factors are combined to promote teachers' sustainable professional development in China.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this study.

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